

Building a Business Case for

Going Green

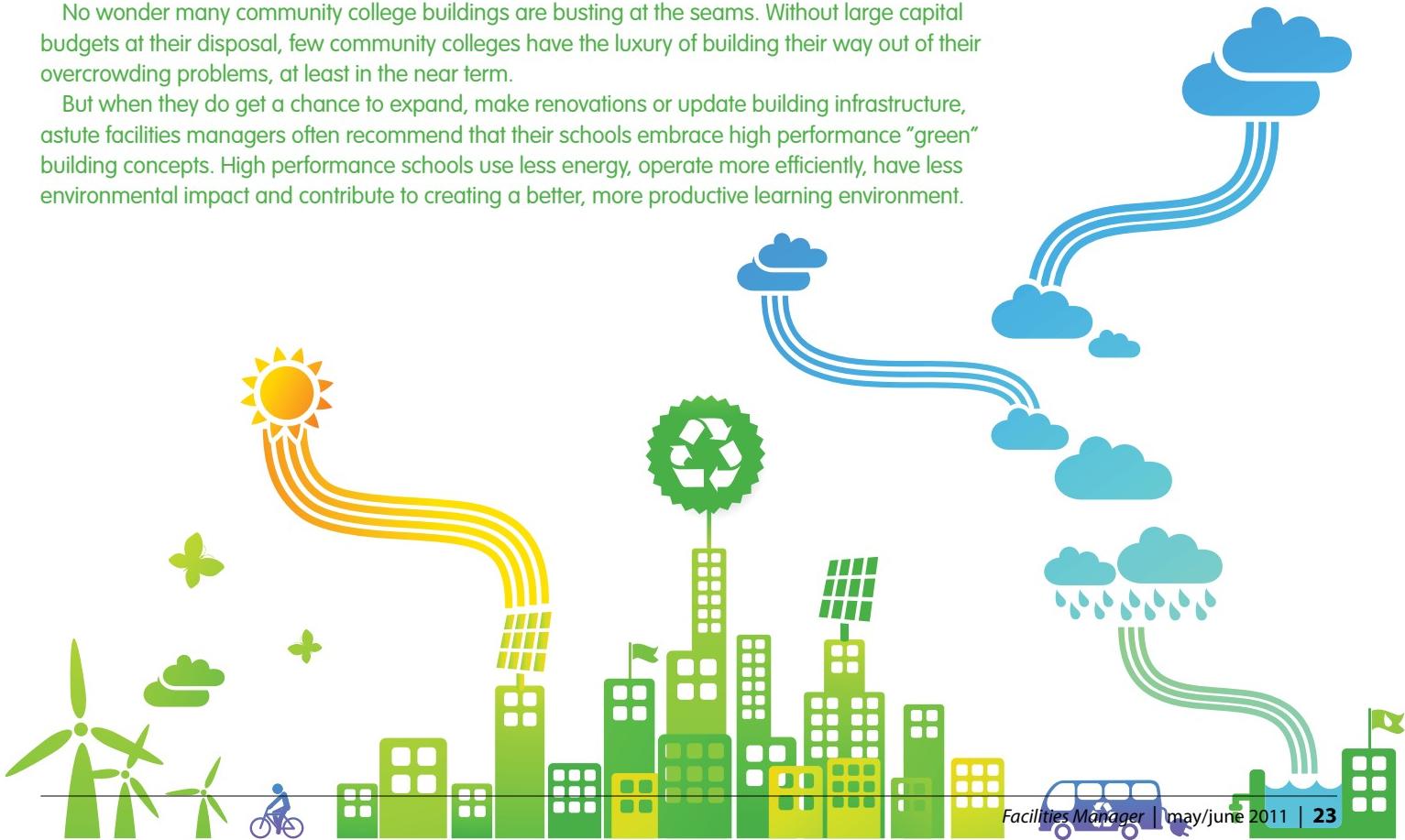
By Bill Harris and Neil Maldeis

Community college enrollments usually rise during tough economic times and the recent recession and slow recovery are no exception. Adults return to school to learn new skills or prepare to change careers and recent high school graduates look for less costly alternatives to a four-year college or university.

In fact, the number of students attending community colleges has grown dramatically in the last decade to about 12.4 million last fall, according to the American Association of Community Colleges (AACC). The AACC says that 1.4 million more students were enrolled in two-year colleges in the fall of 2010 than in the fall of 2007.

No wonder many community college buildings are bursting at the seams. Without large capital budgets at their disposal, few community colleges have the luxury of building their way out of their overcrowding problems, at least in the near term.

But when they do get a chance to expand, make renovations or update building infrastructure, astute facilities managers often recommend that their schools embrace high performance "green" building concepts. High performance schools use less energy, operate more efficiently, have less environmental impact and contribute to creating a better, more productive learning environment.





CAMPUS CONSTRUCTION ACTIVITY MAY BE ON THE UPSWING

In January 2011, the U.S. Department of Labor announced plans to award \$2 billion in grants to community colleges over the next four years as part of the Obama administration's emphasis on increasing the number of "high wage, high skill" jobs in the U.S. In all, the administration plans to invest some \$12 billion in higher education, about \$2.5 billion of which is earmarked for construction projects.

Meanwhile, the National Clearinghouse for Educational Facilities (NCEF) and McGraw Hill Construction expect annual spending on new schools, additions and alterations to increase significantly in the next several years, growing to more than \$70 billion nationwide by the middle of the decade, due in part to pent up demand after several years of slow construction activity.

With more construction likely to take place on community college campuses in the years ahead, facility managers will no doubt play a critical role in helping their organizations make responsible decisions on where and how they invest their capital resources.

Facilities managers are uniquely qualified to recommend building infrastructure and systems solutions that improve their college's ability to achieve its mission and meet the needs of stakeholders in the near term and throughout the long occupied life of campus buildings.

Choosing high performance solutions may result in first costs that are between 0.7 percent and 6.5 percent higher than making conventional choices, according to the U.S. Green Building Council (USGBC). But high performance options pay for themselves many times over during a building's occupied life by reducing energy, operating and maintenance costs. Reducing spending in these areas frees financial resources to support other college priorities.

Just as importantly, high performance school buildings offer a wide range of non-financial benefits including creating a safe, comfortable and efficient place where students, teachers, and staff can do their best work.

HIGH PERFORMANCE SCHOOLS OFFER SIGNIFICANT COST ADVANTAGES

The high performance schools concept was introduced in the late 1990s. High performance school buildings provide community colleges with a variety of advantages compared to buildings that are designed, constructed, and operated using more traditional building approaches.

For starters, high performance buildings are more energy efficient and cost less to operate and maintain, according to the USGBC, which estimates that life-cycle energy and operational efficiencies yield savings between 20 and 50 percent per year in high performance buildings, compared with conventional buildings.

This performance gap can represent millions of dollars of benefit over a typical community college building's decades-long occupied life. Consider that the National Institute of Building Sciences (NIBS) estimates that operating costs account for

at least 60 percent and often as much as 85 percent of a typical building's total life-cycle costs. So it is critically important that community college decision-makers consider total life-cycle implications – not just first costs – when developing expansion or renovation plans.

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Adopting a proactive, knowledge-based service and maintenance approach is key to life-cycle building performance. An integrated, life-cycle service strategy that is data-enabled and results-centered helps facilities managers reach and maintain optimum levels of building performance.

OPERATIONAL BENEFITS DRIVE MISSION EFFECTIVENESS

High performance schools also deliver operational benefits that are directly linked to an organization's ability to accomplish its primary mission and meet the needs of its stakeholders. For example, high performance schools have been shown to have a positive effect on student performance, attendance, teacher recruitment and retention, occupant satisfaction, brand and reputation, and other factors.

The National Research Council (NRC) found a direct link between indoor air quality, student and teacher health, and absenteeism. The NRC also concluded that improved acoustics and a reduction in noise levels have a positive effect on classroom performance, for both students and teachers.

Adopting a high performance building approach can also add luster to a community college's reputation, improving its image in the community and helping attract students, faculty and other employees. As evidence, a survey by the Princeton Review test preparation company found that two-thirds of students would consider a college's environmental report card before enrolling. To help them choose, the Sierra Club and other organizations publish lists of the most environmentally responsible schools. Meanwhile, a Turner Construction Company poll found that most college administrators and others surveyed believe that "green" colleges improve their chances of attracting and retaining well-qualified faculty members, attracting students, impacting student performance, and securing research funding.

Finally, innovative administrations can integrate high perfor-

mance building concepts into their curriculums. For example, Gateway Technical College in Kenosha, Wisconsin, has developed a “green collar” careers program to prepare students to take jobs in environmental and renewable energy fields. Gateway students are getting hands-on experience as they work on an ongoing program to help install a 60,000 BTU direct exchange geothermal heat pump system that will be providing energy-efficient heating to the campus’ horticulture building.

BUILDING A CASE FOR HIGH PERFORMANCE COMMUNITY COLLEGE BUILDINGS

With capital project funding still at a premium, community college facility managers will need to build a convincing business case for recommending a high performance building approach on their school’s next construction project.

- **Identify mission-critical factors.** The best business cases link decisions to the college’s mission and objectives. Consider how adopting high performance strategies can contribute to the school’s success by creating an improved learning environment. Also consider how a system failure would negatively impact mission effectiveness.
- **Quantify economic impact.** To the extent possible, estimate the economic impact of each factor on the college. For example, what is the positive impact of reducing absenteeism rates? What is the negative impact of a preventable failure of a building heating, ventilating, and air conditioning (HVAC) system?
- **Conduct a critical building systems audit.** A critical systems audit (CSA) helps facilities managers determine the current level of performance of critical building systems such as HVAC, water, lighting, electrical, mechanical, controls, and instrumentation. Many community colleges engage a third party, such as an energy services company (ESCO) to help conduct their CSA.
- **Gather and analyze energy and operating costs.** An ESCO can help acquire and analyze energy use over a period of several years, which can be compared to aggregate data for similar sized schools and best-in-class facilities. A wide range of benchmarks are available, including the U.S. Energy Information Administration (EIA) Commercial Building Energy Consumption Survey, a nonbiased source of energy information, analysis, and forecasting.

- **Calculate average maintenance costs.** Estimate the average annual cost of planned and unplanned maintenance, using several years of actual cost data, if available. Also calculate the cost of responding to an unplanned failure, including the cost of repairs made in a reactive mode. Consider the disruption to normal operations that an unplanned failure can have and its associated cost.
- **Evaluate operational benefits.** Consider the value added with a high performance approach in such categories as student and teacher performance, productivity, property values, and brand and reputation.

Armed with this information, facilities managers will be well equipped to recommend a high performance schools approach to their next construction project.

The facilities team at Oklahoma City Community College (OCCC) used a comparable approach to develop a plan for major infrastructure improvements supporting the school goals and the needs of a rapidly expanding student body. In partnership with an architect and an ESCO, school officials conducted an energy audit, weighed their options and moved forward on a series of energy conservation measures.

Among other actions, OCCC installed a new building automation system and made improvements to an existing ice storage system. As a result of the project, school officials were able to increase the size of the campus by about 30 percent while reducing energy costs per square foot by about 35 percent.

OCCC’s challenges are not unique among U.S. community colleges. Most campuses are faced with the pressures of growing enrollments and shrinking capital and operating budgets. A high performance schools approach can help administrators and facilities managers meet these challenges head on and focus on their most important mission – creating a better, more comfortable environment for students to learn and professors to teach. ☰

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